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species *Lutra bathygnathius.* To the bears he adds *Ursus theobaldi*, which may probably be the ancestor of the aswail (*U. labiatus*), but had better developed molars. *Hyænarctos punjabensis* and *H. palæindicus* are considered to be distinct from *H. sivalensis; Amphicyon palæindicus* is added to the Canidæ and *Viverra durandi*, the largest known civet, to the Viverrideæ; *Hyæna colvini* is separated from *H. sivalensis*, and is said to approach Crocuta, and *H. macrostoma* constitutes an important link between the more typical members of the genus and the viverroid and canoid Carnivora. To the Felidæ are added *Æluropsis annectans*, and *Felis brachygnathus* and the occurrence of a hyænodon (*H. indicus*) in the Siwaliks is mentioned as a matter of extreme interest.——M. Lemoine (Bull. de la Soc. Geol. de France, 1883), describes *Neoplagiaulax eocenus* and *N. marshii*, from the Lower Eocene near Rheims. The genus is distinguished from Plagiaulax by the presence of a single premolar only on each side. M. Lemoine considers it as intermediate between Plagiaulax and the recent Bettongia.

MINERALOGY.[1]

NATIVE IRON FROM NEW JERSEY.—As a deep well was being bored on the Van Horn farm, in Raritan township, Middlesex county, N. J., about three miles east of New Brunswick, in Triassic red shale, it was noticed that when the drill was raised from the well there were numerous particles and small grains of iron adhering to its lower end. This attracted the attention of Mr. J. F. Hotchkiss, of Plainfield, who found that particles of native iron occurred not only in the well, but in the surface earth about the farm.

An analysis of an unwashed sample gave J. B. Stillman:

Iron	Phosphorus	Sulphur	Silica	Titanic acid
76.12	0.27	1.23	11.20	0.21

Professor Cook also made repeated visits to the farm and picked out particles of metallic iron with a magnet, being satisfied that there was no mistake or deception in the case.

He states[2] that while a few of the grains are as large as pin heads, most of them are smaller and much is fine dust. Some of those brought up by the drill are but little oxidized on the surface, while those found in the soil are rusted, often so completely as to leave only a small particle of metallic iron in the center of the rusted grains. The metal flattens under the hammer, and is evidently native. Traces of copper are reported to occur in the iron.

The observation is of great interest. It is now well known that metallic iron occurs in trap, but its discovery in a sedimentary shale introduces new considerations. It may have been reduced by organic substances, as supposed by Hausman and Karsten in the case of certain analogous instances in Germany, or it may have been washed out of a trap dyke, or again it may be the result of meteoric action in Triassic times. Being found at a depth of fifty feet in the red shale, it cannot belong to the drift, but is evidently of Triassic age. The subject is very suggestive.

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[1] Edited by Professor H. CARVILL LEWIS, Academy of Natural Sciences, Philadelphia, to whom communications, papers for review, etc., should be sent.

[2] Geolog. Survey of N. J., Annual Report for 1883, p. 162.

FLEXIBLE SANDSTONE FROM PENNSYLVANIA.— H. C. Lewis[1] records the finding of itacolumite, or flexible sandstone, at two localities in Pennsylvania, in Paradise township, Lancaster county, at the "Wolf rocks," and in White Marsh township, Montgomery county, north of Lafayette. In both localities the flexibility, which is much less than in the North Carolina rock, is evidently due to the decomposition of the cementing material in a formerly inflexible sandstone. By the removal of the feldspar each thin layer of sand is separated by small distances from the layers above and below, thus allowing of limited flexibility. This explanation probably applies to all flexible sandstones. The "ball-and-socket" theory of the grains of sand is of course absurd.

SOME MAINE MINERALS.—G. F. Kunz[2] states that nearly 1500 crystals of tourmaline have been obtained from "Mount Apatite," near Auburn, Maine. These are often brilliantly polished, and are characterized by their beautiful pale color. Colorless, light pink, light blue, bluish-pink, pale green and other colors occur in different crystals or are sometimes nearly all seen in a single tourmaline. Good gems have been cut from these crystals.

The apatite of the same locality is finer in color and form than elsewhere in America. It has the same pale shades of pink, blue, purple and green as the tourmaline found with it, and has been set for gems.

Other associated minerals are lepidolite, quartz, albite, orthoclase, beryl, garnet, cassiterite, gummite, autunite, muscovite, leucopyrite, cookeite, biotite, amblygonite and zircon.

At Gorham some unusually fine crystals of andalusite have been found. The color is mostly a brownish flesh tint, and sometimes grayish-pink. Occasional translucent pieces occur in the nearly opaque crystals.

The interesting fact was observed that while the hardness on the side of the prism is 6–6.5, the hardness on the basal plane is 7.5. The crystals occur in a quartzite vein in a brown mica schist, in which are small crystals of pyrrhotite.

NATURAL NITROUS OXIDE, OR LAUGHING GAS.—It is stated[3] that "the great Sierra tunnel, at Tioga, has developed the presence, in the indurated mudstone, silicious limestone and arenaceous shales of Tioga hill, of protoxide of nitrogen, the exhilarating gas known as 'laughing gas,' with traces, also, of the nitrates commonly associated with several of the metals. As is well known, the inhalation of protoxide of nitrogen produces exhilaration to intoxication, an irresistible impulse to muscular exertion, insensibility to pain, and develops the characteristic propensities of the individual to a striking degree. Air is forced in the great Sierra tunnel through wooden boxes, and the distance, leakage and friction being great, the supply was inadequate, and hence the accumulation of this nitrous gas at the header, the inhalation of which had the characteristic effect upon those working there as soon as one of them got an overdose. A muscular miner was brought out fighting, and it took four men to hold him until he returned to consciousness in the open air. A mail carrier went in and got a dose, and, when brought out, seized a couple of bars of iron, lashed them to his feet with wire, leaped over the dump and went sailing down the mountain over the snow."

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[1] Proc. Acad. Nat. Sciences Phila., 1884.

[2] *Amer. Jour. Science*, April, 1884.

[3] *Lundy* (California) *Index*.

TIN FROM NORTH CAROLINA.—A valuable vein of cassiterite has been found at King's Mountain, a small town in Shelby county, N. C. The vein discovered is between four and five feet in thickness, and has been struck in two places. The ore yields 869.2 pounds of tin per ton of ore. The finest ore in the English tin mines, at Cornwall, yields less than half this per cent of tin to the ton, and great expectations are therefore aroused concerning this new vein. Specimens of the ore, marked "unknown," were on exhibition at the Boston Exposition last summer, but it is only lately that the place of the vein has been made public.

Tin occurs sparingly at many other places in the United States, but has never been worked with profit.

SWEDISH MINERALS.—*Mangan-brucite.*—L. J. Igelström[1] describes some small grains of a honey-yellow or brownish-red color which occur in the hausmannite ore at the Jacobsberg mine in Wermland, Sweden. They are devoid of cleavage and are often colorless within, while deeply colored on the outside. Water is set free on the application of heat.

Analysis gave:

MgO	MnO	H_2O		
57.81	14.16	28.00	=	99.97

The formula $(Mg, Mn)[HO]_2$ is given, and the name *Mangan-brucite* proposed. Apparently, however, it is a mere alteration product.

Talc-triplite.—The same author finds in the lazulite of Horrsjöberg certain small yellow or yellowish-red translucent amorphous grains which, although intimately mixed with other minerals, he regards as a new species. Before the blowpipe it melts to a black, metallic glass. Soluble in acids. Composition:

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[1] Oefvers. af Kgl. Vet. Akad. Förhandl., 1882, pp. 83–91.

PO_5	FeO	MnO	CaO	MgO
32.82	16.12	14.86	14.91	17.42

Berzeliite.—Many rare minerals accompany the hausmannite of Sweden. Native lead, native copper, monimolite, atopite, ganomalite, chondroarsenite, hyalophane, ekdemite, hedyphane, braunite, manganophyllite, tephroite, manganosite, pyrochroite, manganbrucite, barylite, rhodonite are among the species found. Some of the above are very questionable species. Recently Igelström[1] has observed the rare mineral berzeliite in the hausmannite of Nordmark. It occurs both as a vein of a yellow massive material, and disseminated in grains through veins of calcite.

Analysis of the pure yellow material gave:

As_2O_5	CaO	MgO (with some MnO)	Pb and Cl
57.80	25.25	16.95	traces

The formula given by Dana (Mineralogy, p.544) is adopted.

Another variety of berzeliite, found many years ago at Longban has the formula of an orthoarseniate and is singly refracting, while that now described is doubly refracting. The physical characters of the two minerals are identical.

M. E. Bertrand[2] has made an optical examination of the two varieties of berzeliite, and finds that while the optical characters of the Longban variety are vague, differing in different parts of the mineral, those of the Nordmark variety are well marked and constant. The acute bissectrix is positive and the negative obtuse bissectrix is perpendicular to certain plane faces. It probably belongs, therefore, to the orthorhombic system.

Ganomalite.—M. Sjögren[3] has examined the silicate of lead and lime, to which Nordenskiöld has given the name ganomalite. He has found that the crystals are tetragonal, and show strong double refraction with a positive axis. As the cross traversing the rings is sometimes dislodged, more or less, he thinks it possible that the mineral may be biaxial with a very small optic-axial angle. Two analyses are given, the first of the variety from Longban, the second of that from Jacobsberg:

SiO^2	PbO	CaO	MnO	Gangue
20.40	69.42	9.89		0.29
18.33	68.80	9.34	2.29	1.24

Tephroite.—Very small crystals of tephroite have recently been found at Longban. A crystallographic investigation has shown that all the forms are those known in chrysolite, and that, as

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[1] Bull. Soc. Min. de France, 1884, p. 27.

[2] *Loc. cit.*, p. 31.

[3] Geol. Fören. d. Stockholm, 1883.

Descloiseaux announced in his "Manuel de Mineralogie," tephroite and chrysolite are isomorphous.

Pyrosmalite. — Alex. Gorgen[1] communicates an analysis of pyrosmalite from Dannemora which is of considerable interest in that it shows a close analogy in composition with a silicate of manganese from Adervielle, Hautes Pyrenees, described by Bertrand under the name of Friedelite.

The oxygen ratios of the two minerals are as follows :

	SiO_2	$\underbrace{MnO\ FeO\ CaO\ MgO}$	$\underbrace{Cl\ Fe}$	H_2O
Pyrosmalite	18.24	11.56	0.84	7.60
Friedelite	18.37	11.42	0.80	8.53

Both minerals are remarkable for the energy with which they retain their chlorine and water. Both are hydrated chlorosilicates, and present chemically the same analogy as Bertrand has shown to exist between their crystalline form and their optical properties.

Haydenite.—H. N. Morse and W. S. Bayley[2] have reëxamined the variety of chabazite known as haydenite, found in the gneiss quarries near Baltimore. Cleaveland named the species in 1822, but its independence as a separate species was doubted until Levy, in 1839, showed it to be, as he supposed, monoclinic. But Dana afterwards showed Levy to be in error, demonstrating that the mineral was rhombohedral, occurring in scalenohedrons. He held that haydenite and chabazite were identical, although the analyses of the two minerals, yet made, differed. The analysis of Silliman and Delesse differed from one another and from chabazite.

The composition, as now ascertained, is (mean of two analyses):

SiO_2	Al_2O_3	Fe_2O_3	CaO	MgO	BaO	K_2O	H_2O	
49.24	18.07	0.84	5.16	0.86	1.47	3.00	21.31	= 99.95

By regarding the iron as in the ferrous condition and, like magnesium and barium, replacing calcium, the analysis closely agrees with the recorded analysis of chabazite and with Rammelsberg's formula for that mineral. Haydenite is thus undoubtedly in all respects identical with chabazite.

BOTANY.[3]

An Observation of the Fertilization of the Germ Cell of Equisetum arvense.—The spores were started on the 30th of April. For some reason, for a time growth did not seem healthy, and they were neglected until the last of June, when I found that they had developed large prothallia, both male and female, the latter

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[1] Bull. Soc. Min. de France, 1884, p. 58.

[2] *Amer. Chem. Journal*, March, 1884.

[3] Edited by Prof. C. E. Bessey, Ames, Iowa.